

**BRAC CLEANUP TEAM
NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
TRENTON, NEW JERSEY
1996 BUSINESS PLAN**

PURPOSE:

The purpose of this Business Plan is to present an abbreviated BRAC Cleanup Plan prepared by the NAWCAD Trenton BRAC Cleanup Team (BCT) for environmental cleanup of NAWCAD Trenton.

BASE HISTORY:

The Naval Air Warfare Center Aircraft Division Trenton, New Jersey, was ordered closed under the 1993 BRAC decision. Figure 1 shows the configuration of the activity at present and at the time of the closure agreement. Significant events at NAWCAD Trenton are summarized below.

Naval Aircraft Factory Mercer Field, Trenton was created in July 1943 for the specific task of quick and expert commissioning of combat aircraft for the immediate use of the fleet. During its first 18 months in existence, Naval Aircraft Factory Mercer commissioned 9,183 bombers and fighters.

On 23 July 1946, Naval Aircraft Factory Mercer was declared surplus, but the War Department decided to retain the facility to use for the Aeronautical Turbine Laboratory. Subsequent agreements with the Civil Aeronautical Authority and Board of Chosen Freeholders (the county government) enabled the field to be used jointly for civil and military operations (Naval Air Turbine Test 1959).

In 1947 land previously occupied by a General Motors plant that produced torpedo bombers, was turned over to the Navy. The area consisted of two parcels of land. The 10 acres east of the Conrail tracks contained an administration building and a small hangar where the landing gear and folding wings were tested; 56 acres west of the tracks contained two storage buildings, a boiler house, and the main hangar. In 1949, the Navy also obtained 0.4 acres on the Delaware River and began to construct a pumphouse.

Three separate buildings were constructed to house blower, test, and exhaust facilities. These included 4 turbojet test cells and 1 turbo-propulsion test cell. The personnel complement was fixed at 206, with a trained nucleus from Aeronautical Engine Laboratory staff in Philadelphia, Pennsylvania. Administratively, the Aeronautical Turbine Laboratory was conceived to work in conjunction with the Aeronautical Engine Laboratory. To achieve this goal, the Bureau of Yards and Docks proposed that Mercer County be taken out of the Third Naval District (New York) and transferred to the Fourth District (Philadelphia).

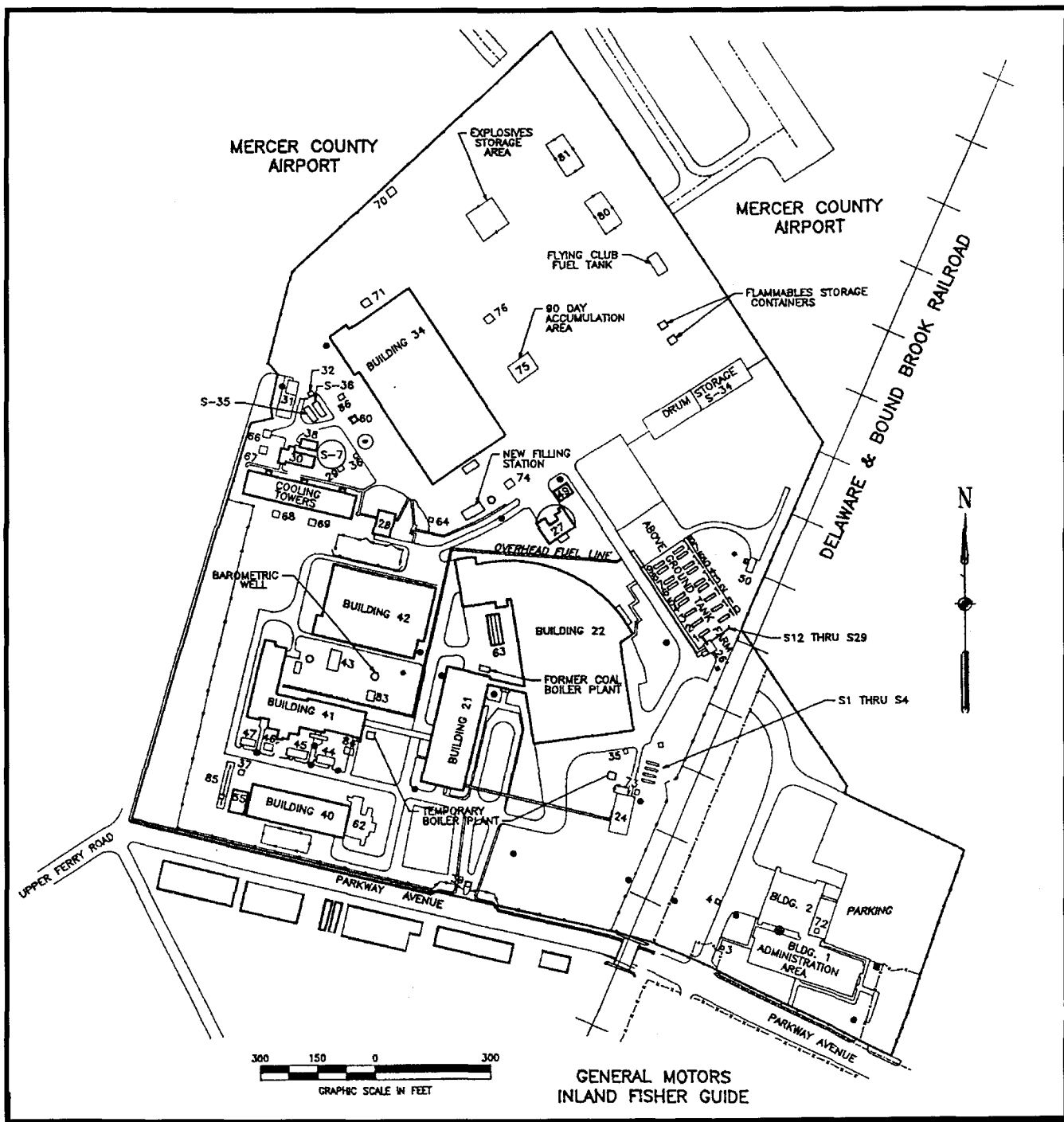


Figure 1

In August 1949, Aeronautical Turbine Laboratory was switched from the Naval laboratory organization to a station-type arrangement in which it had its own Supply, Security, Public Works and Industrial Relations departments. On 1 July 1951, the Naval Air Turbine Test Station was commissioned on the Mercer County site. Important milestones in the early development of this Activity include the following:

Authorization of funds for a large, new altitude chamber in September 1954.

The Activity used waters from the Delaware River to supply its potable water plant, which was activated in September 1955.

Initial operation of the test cells, with a J40 engine being tested first, in Altitude Chamber 1-E on 28 December 1954. Official opening of Naval Air Turbine Test Station on 4 November 1955

Full-scale engine tests work beginning early in 1957 with the altitude performance and windmill starting characteristics of the J-75 engine.

Modifications of trichloroethylene and ethylene glycol cooling systems, for more flexible temperature control, in May 1958.

Doubling personnel by 1955-19545 and achieving a stable complement of about 500 in the decade between the late 1950s and late 1960s.

NAWCAD Trenton provided a wide range of research, development, testing, and evaluation of aircraft engines, components, and accessories in the following decade. These activities included anti-ice and cooling experiments, crash tests, investigations of smoke emissions and corrosion, tests of venous fuel and lubricants, and other propulsion-related work. In 1974, infrared signature surveys and hardware coating studies were initiated, and a year later an engine was developed for the sea-launched cruise missile. The calibration laboratory was relocated from Building No. 55 to Building 27 and new freon condensers were added in 1976.

By October 1977, NAWCAD Trenton's population consisted of approximately 600 civilian employees and 8 Naval Officers. At that time, jet engines were being tested at an estimated rate of 2,150 hours/year, the plant was being fully utilized for an estimated 1,800 hours/year, and soak time, the amount of time spent allowing an engine to acclimate to test conditions, accounted for about 760 hours/year. Approximately 50 jet engine installations and removals per year were also being conducted at this time.

In 1978 facilities were constructed for gas bottle storage, flammable liquid storage, and ready ammunition storage. The fuels and lubricants group area in Building No. 34 was renovated in 1980, and an asbestos building (Building No. 70) was constructed to temporarily house asbestos from small pipe fitting jobs, where licensed asbestos removal was required. By the mid-1990s, construction of missile-related test equipment had become a priority for NAWCAD Trenton

Much of the laboratory work in this period was in testing new fuels, including synthetic JP-5, shale fuel, marine diesel fuel, and home heating oil. The F-18 and Tomahawk Cruise Missile engines were tested, as well as classified foreign engines that came under review. Fiber optic digital communications and laser doppler velocimetry were also investigated. NAWCAD Trenton depended, and still depends heavily on trichloroethylene as a heat exchange medium for air and fuel for engines under test. The Activity has a 25,000 gallon trichloroethylene piping system with associated valves, pumps and heat exchangers. When this substance was identified as a potential health hazard in the late 1970s personnel were issued dosimeters and breathing equipment was supplied in case vapor concentrations exceeded 50 parts per million (NAWC 1979). Studies were made by in-house personnel and contract consultants to identify a less toxic substitute for trichloroethylene, but no suitable substitute was found. In 1980, the three condenser tubes were found to be leaking trichloroethylene and freon. Also, in areas where hydrazine was tested for aircraft emergency starts, sniffers were installed to detect this suspected carcinogen. Today, NAWCAD Trenton remains a field activity of the Naval Air Systems Command. The work force has been reduced to 451 full time Civilian employees and 3 Naval Officers and will uniformly be reduced to zero by 1998.

BASE REUSE PLANNING

The local reuse committee for NAWCAD Trenton was formally established by Ewing Township Committee in April 1994. The configuration of NAWCAD Trenton was originally divided by the reuse committee into six geographic zones shown in Figure 2. These areas are; Zone 1 Engine Testing Plant (10.49 Acres), Zone 2 - Wastewater Plant (3.65 Acres), Zone 3 - Fuel Farm (7.67 Acres), Zone 4 - Hanger and Apron Area (20.55 Acres), Zone 5 - Warehouse Area (13.58 Acres) Zone 6 - Administration Area (9.97 Acres). Groundwater is not a geographic area to for reuse but is considered separately across the entire site as Zone 7 in order to facilitate cleanup planning. A draft reuse plan is expected in March 1996. The final reuse plan will be issued in July, 1996. Zone 6, where the Administrative buildings are located, was characterized as environmentally clean in the CERFA report issued in July 1994. A FOSL was signed in July 1995 which enabled a small manufacturing company to occupy Bldg. 2 on the site. Following the EIS, to be completed in FY97, Zone 6 will be the geographic area most available for reuse and transfer. Environmental constraints on the transfer of the remaining parcels will be determined after the results of groundwater studies and the EBS Phase II. Both projects are currently in progress. Results of the studies should be available in the first quarter of FY97.

BASE DESCRIPTION OF ENVIRONMENTAL SETTING

The NAWCAD Trenton is located on a 66-acre lot at 1440 Parkway Avenue in Ewing Township, in the west-central portion of Mercer County, New Jersey. Additionally, the Activity includes easements for ascensions, landings and access at the adjacent Mercer County Airport and approximately 5 acres in utility access agreements. The base is located approximately 5 mi. northwest of the center of Trenton, New Jersey and approximately 30 miles northeast of Philadelphia, Pennsylvania.

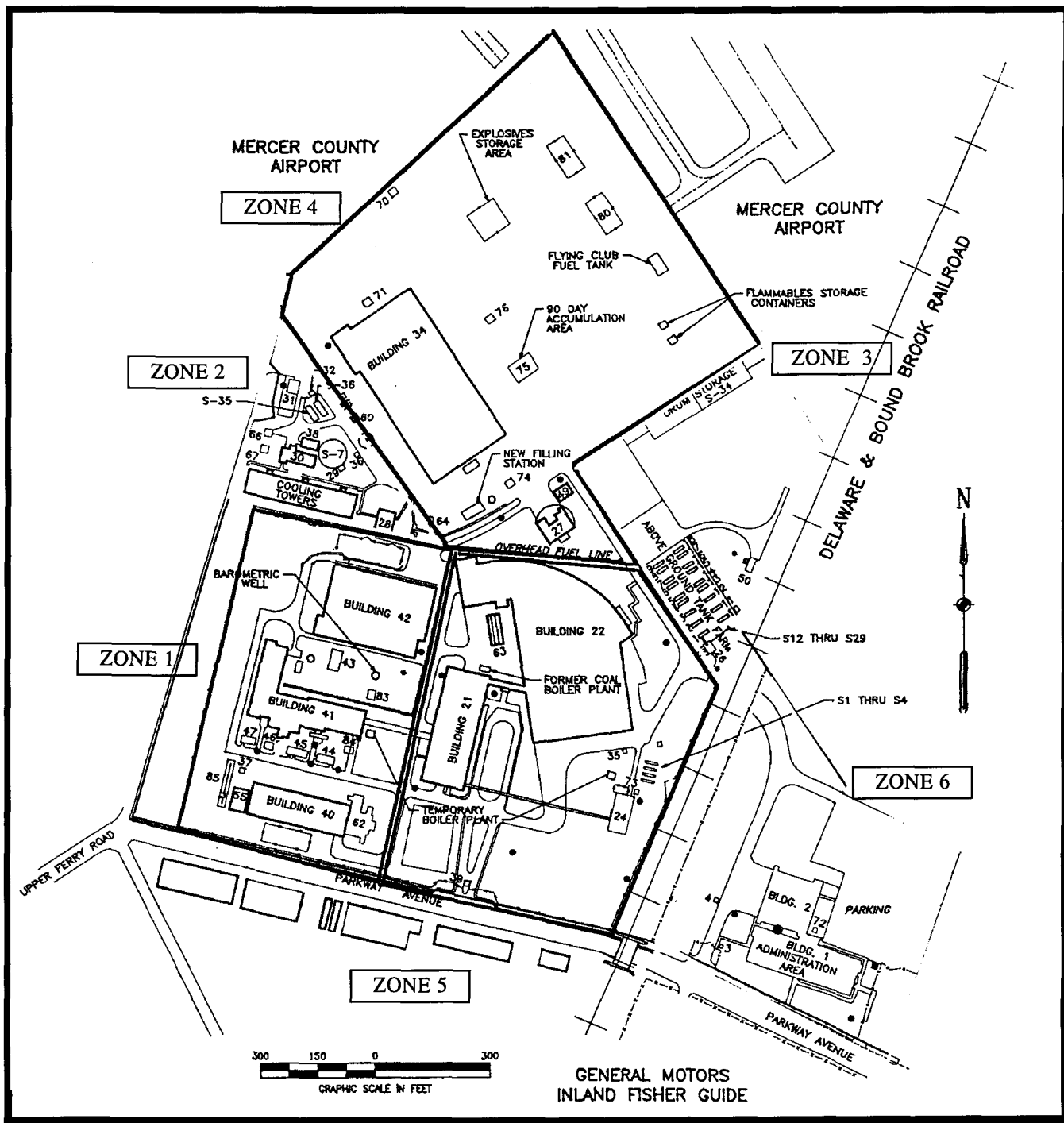


Figure 2

The Delaware River is located approximately 2 miles to the south southwest of the facility. Locally, the Mercer County Airport borders the northern half of the NAWCAD Trenton property. A U.S. Marine Corps Reserve Center is located north of the airport. A Conrail right-of-way traverses the site on the east and separates the Administration Building and Storage Hangar from the rest of the facility. Both commercial and agricultural properties adjoin NAWCAD Trenton to the north and east. The southeastern area of the property is bordered by Parkway Avenue. Located across Parkway Avenue is the General Motors Corporation, Inland Fisher Guide Division, Trenton Plant, which manufactures light-weight metal parts. Predominantly residential and light industrial areas are located southwest of NAWC, and a large portion of the land between the Delaware River and these areas is owned by the State of New Jersey. Also, located within the NAWCAD Trenton vicinity are a State Police headquarters, a school for the deaf, and a hospital.

The NAWCAD Trenton is generally underlain by surficial glacial deposits of Pleistocene age consisting of silt, sand, clay, and gravel. Thicknesses range from a minimum of 4 ft. below grade along ridges to a maximum of approximately 30 ft. in the northeastern areas, with an average depth to bedrock of 17 ft.

Two distinct geologic formations underlie NAWCAD Trenton. These are the Lockatong Formation and the Stockton Formation, both of Triassic Age. The base of the Lockatong Formation is present in the Activity area. The Lockatong Formation is considered to be derived from lake deposits. It is approximately 3,500 ft. thick and consists primarily of dull red and gray to black argillite (or mudstone). Locally, thin layers of impure limestone and/or calcareous shale are present. The upper beds of gray argillite are intensively interbedded with dark red argillite. The strata are evenly bedded and very fine-grained. The Lockatong argillite has a poor capacity to transmit water due to its fine "laminated" nature. The underlying Stockton formation has a high capacity to transmit water because it is coarser "laminated" and more brittle which allows for higher development of fracture permeability. The Stockton Formation consists of tan and red, coarse to medium "laminated" sandstone derived from fluvial channel deposits. The Stockton Formation has been found in borings advanced in the southern and eastern portion of NAWC, including a 603-foot well boring drilled for a production well near the Tank Farm (Widmer, 1965). Bedding of both the Stockton and the Lockatong formations trend east-northeast and dips 10-25 degrees to the north - northwest in the vicinity of the site. The upper bedrock surface is moderately to extensively weathered and fractured.

Ground water at this site occurs primarily in the bedrock. The groundwater in the overburden is discontinuous and does not exhibit typical flow characteristics. The depth of the ground water ranges from 6 to 14 ft. below ground surface. Ground water flow within the bedrock aquifer is to the south-southeast.

OFF-BASE PROPERTIES

There are two off-base properties associated with NAWCAD Trenton. The first property is the 0.4 acres on the Delaware River, obtained by the Navy in 1949.

A pumphouse was constructed at this location and operated to pump river water to the potable water treatment plant for the Activity as well as water for the non-contact cooling water system. At this time, the pumphouse is operated to pump water from the river through a 20 inch pipe only to the non-contact cooling system. The second property is Substation M located at the Mercer County Airport. No hazardous waste is generated at these locations. No spills of hazardous materials have been reported at these locations.

ENVIRONMENTAL PROGRAM RELATION TO BASE REUSE PLAN

Zone 1

Zone 1 encompasses the industrial area of NAWC Trenton which is associated with IRP Sites 1, 4, 5, and 8. Site 1 is the TCE (Brine) handling area which was subject to spills. Significant groundwater contamination is present which includes TCE and associated breakdown products DCE and Vinyl Chloride well above ground water standards. Site 8 is the barometric well, a 52 foot deep sealed wastewater collection sump. The barometric well collects wastewater from Zone 1 and some from Zone 5 processes. Regulator concern is that the barometric well leaks and is contaminating ground water in the area. The Navy feels that the well itself is sound and ground water contamination at Site 8 may be due entirely from Site 1. An investigation is underway in conjunction with the NJDEP, USEPA, USGS, and EA Engineering to define the geology of the zone and fully delineate the extent of the TCE contamination in the groundwater. The Navy implemented a removal action which consisted of construction of a "pump and treat" system to contain ground water on site and prevent it from infiltrating deteriorated storm sewer piping. The effectiveness of the system is being evaluated and the flow capacity and treatment technology are both being upgraded in FY96.

Soil at IR Sites 1 and 8 is scheduled for remedial investigation in FY97. Removal actions, if required, are scheduled for FY98.

IRP Sites 4 and 5 were associated with jet fuel spills from overhead pipelines. No further action for soils has been proposed by the Navy. Documents have been submitted to the regulators for concurrence.

Zone 2

The Zone 2 contains IRP Sites 6, 7, and 9 which are included in a no further action for soils decision document which is expected to be resolved by the end of the Fiscal Year.

Zone 3

Zone 3 contain. IRP Site 3, a former sludge drying and disposal area. Industrial wastewater sludges were dried and buried in Zone 3. The exact location of the sludges was delineated with a "ditch witch" line trenching tool. The nature of the sludges allowed this cost effective delineation method. The sludges, have been excavated to below regulatory standards. Documents recommending no further action for soils are being prepared in FY96. Zone 3 also contains IRP Site 2 which is included in the no further action decision document for soils.

Zone 4, 5, and 6

No environmental cleanup program is necessary at Zones 4, 5, and 6. Zone 6 was described as environmentally clean in the CERFA report issued in June 1994.

Zone 7

The groundwater of the entire facility is being treated as one operable unit for the convenience of investigation and remediation due to the widespread contamination and small size of the facility.

ENVIRONMENTAL COMPLIANCE PROGRAM

Asbestos: An asbestos removal design was completed in June 1995. Asbestos removal in Buildings 21, 22 and 34 will begin in the Summer of 1996. Asbestos removal for Building 24, Steam Plant, will be scheduled for FY97. Asbestos removal in Buildings 40,41 and 42 will begin after operational closure in FY98. An asbestos inventory and O&M manual have been completed and will be updated as asbestos is removed.

Underground Storage Tanks: All regulated underground storage tanks have been removed with the exception of one UST which was abandoned in place with agreement from the New Jersey Department of Environmental Protection. Five underground sumps, which require registration as UST's in New Jersey, remain in service until base closure in FY98. These sumps will be addressed in the EBS II. A recommendation for removal is likely. No further action decisions were issued by the State for four UST's where discharges were observed during the removal process. Remediation at two other UST removal sites will be addressed in the EBS and BCP. Above Ground Storage Tanks: Four jet fuel storage tanks have been removed from service. Fourteen jet fuel tanks and four boiler fuel tanks have been upgraded to conform with NJDEP Discharge Prevention Containment and Countermeasures regulations. Reuse of the aboveground tanks is anticipated after base closure.

Radon: Radon testing throughout the facility has been completed. No building, measurements exceeded 4 picLL.

Lead Base Paint: Lead base paint is assumed to be present in buildings and structures due to the age of construction. All reuse will be restricted to non-residential purposes and therefore requires no further action according to BRAC policy.

Resource Conservation and Recovery Act: There are no cleanup actions required by RCRA.

Air Permits: Title V air operating permit application was submitted to NJDEP on 15 August 1995 as required by State and Federal regulations for major sources. Funding for banking of air emissions credits is an unresolved Navy issue.

Polychlorinated Biphenyls (PCB): All PCB transformers and switchgears have been removed. No further action is required.

EBS PHASE II: The EBS Phase II review process identified 64 areas of concern. Additional sampling and investigation will be performed in the summer of 1996. Results of the investigation, available in the Fall of 1996, will determine if additional remedial action is required.

MAJOR EXECUTION ISSUES

The major execution issues are, 1. Completion of the investigative phase of the EBS, 2. Delineation of the groundwater contamination, 3. Upgrade the interim action groundwater treatment plant, 4. Conduct feasibility studies for Zone 1, 5. Design and construct final groundwater treatment plant, and 6. Complete soil investigation in Zone 1 and Zone 3. The execution plan is to proceed with all projects concurrently in order to facilitate transfer of the base properties in accordance with the reuse plan at base closure.

- Completion of the EBS is on the critical path to developing a Finding of Suitability to Transfer (FOST) Identification of additional sites requiring cleanup is possible.
- Groundwater is contaminated with high concentrations of trichloroethylene (ICE) and its degradation compounds. The horizontal and vertical limits of the contamination need to be defined in order to implement a long range remedy acceptable to the State and Federal regulatory agencies.
- An interim action groundwater treatment plant utilizing an activated carbon process treatment technology was constructed at IR Site 1, located within Zone 1, to prevent off-site migration of the contaminated groundwater. Following a successful startup of the plant, several operating problems were experienced which prevented consistent operation of the plant. Many of the problems have been identified and corrected. The plant has been restarted. An upgraded treatment design, incorporating an air stripper and catalytic oxidation process, has been completed. The upgraded process will provide a more predictable and cost effective operation for long term use.

- A groundwater feasibility study will be performed to determine a final remedy for the groundwater contamination. Feasibility studies for soil may also be included.
- The design and construction of the final process configuration of the groundwater treatment plant will be performed. The design will incorporate flexibility and long term cost effectiveness.
- Additional soil investigations will be conducted in Zone 1. Additional areas requiring cleanup may be identified.

BCT INITIATED PROGRAMS & SAVINGS

The BCT initiated an interim removal action at IR Site 1 in Zone 1. The initiative resulted in the design, construction, and operation of a ground water treatment plant in less than eight months. The purpose of the treatment plant was the containment of groundwater contaminated with trichloroethylene from spreading; off-site to a residential area. Upgraded remedial technologies, currently under design, will evolve from this initiative. Soil related issues in Zone 1 will be addressed separately.

A contaminated soil removal action at the IR Site 3, Sludge Burial Area was also initiated by the BCT. Personnel from the activity and another Navy facility teamed to locate, remove, and sample contaminated soil from a former industrial sludge burial site. A rented trenching machine was utilized in a grid pattern to locate additional buried sludge which had not previously been known. The trenching procedure resulted in cost savings over traditional soil boring and laboratory analysis techniques.

The BCT also initiated cost effective soil sampling in the Jet Fuel Storage Tank Farm utilizing Navy personnel experienced with sampling procedures. Additional BCT initiatives include preparation and submittal of a No Further Action Decision Document for Soil at six of the nine IR Sites, an interim remedial action decision document for IR Site 1 and an underground tank monitoring and remediation proposal.

SCHEDULE & MILESTONES

Schedules for 1 installation Restoration Site Cleanup and Environmental Compliance Programs are attached. See pages 12 and 13 for target dates for completion of all ROD's for IR Sites and remedial actions. The mission at NAWCAD Trenton will not end until October 1997. Based on the mission cessation date and current knowledge of the remediation requirements, December 1998 is the target date for transfer of Zones 2, 3, 4 and 5.

PAYBACK OPPORTUNITIES FOR COMMITMENT OF FUNDING

A budget has been prepared to fund environmental requirements which have been identified. Completion of these requirements should be compatible with the Reuse Plan proposals.

Field work to investigate additional areas of concern identified in the EBS Phase II, will begin in June 1996. results of the investigation will be available in the Fall of 1996. It is possible that based on the Phase II EBS, additional cleanup requirements will be necessary, particularly in Zone 1 . Additional cleanup of previously unidentified areas will impact the timing of the suitability to transfer documents for the affected parcels. Funding to complete cleanup at new sites will have to be addressed promptly to minimize delays in executing the reuse plan.

The preceding environmental strategy represents the BRAC Cleanup Team Business Plan for completing the environmental cleanup requirements necessary to facilitate the transfer of NAWCAD Trenton for economic redevelopment as described in the Community Reuse Plan.

This comprehensive business man was prepared by NAWCAD Trenton BRAC Cleanup Team.

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